

Femto-H₂ Transmutation Proves the Current Nucleus Model Incorrect

(Governments Should Lead the Discussion to Define Femto-D₂ Model of Cold Fusion)

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Abstract:- The Cold fusion is caused by femto-D₂, which has electron in deep orbit at a few femto-meters from the nucleus to shield coulomb Repulsive force between d-d. Metal with FCC lattice and with H loading can generate femto-H₂. Both femto-D₂ and femto-H₂ can transmute target elements. I reported previously that current nucleus model is incorrect and nucleus is constituted only by proton and internal electron based on transmutation experiment with femto-D₂. In order to prove that femto-D₂ exists I proposed to run transmutation experiments with femto-H₂ because H is constituted by proton. And I discovered the phenomena which can be related to transmutation with femto-H₂. One is the existence of helium-3 in plasma fusion reactor and another is brown gas. Because brown gas is commercially available, I would like to propose Governments to mass-analyze brown gas to prove that brown gas is constituted by hydrogen ¹⁶O, ¹⁸O and ³He by femto-H₂ transmutation of H₂O, and H₂ and ¹⁶O₂ are produced by electrolysis of H₂O, and also would like to ask plasma fusion society to probe the mechanism of helium-3 generation by the support of Helion Energy. I also would like to propose femto-H₂ generator with nano-zeolite and feasibility study to develop femto-CI₂ which will open the way to stable super-heavy element.

Keywords:- LENR, Cold Fusion, Femto-D₂, Femto-H₂ Electron Deep Orbit, Nucleus Model, Neutron, Island of Stability, Expandable T Site, Super Heavy Element.

I. INTRODUCTION

Cold Fusion is caused by femto-D₂, which covalent electron is deeper than n=1, at a few femto meters from the nuclei. Because the electron density between nuclei is so dense that it shields coulomb repulsive force to cause Cold Fusion.

Because femto-D₂ is neutral it can fuse to the target element by adding two deuteron which is believed to be constituted by proton and neutron. However, transmutation experiment shows that increase of the atomic number is 4 and d is 2, which is contradict to the current nuclear physics. This experiment shows that current nuclear physics and particle physics has been incorrect since the introduction of neutron as a fundamental particle. Because The impact on nuclear physics and particle physics is significant, governments and research institutes have ignored this finding.

I have found the many circumstantial evidences and found the way to probe mechanism of Cold Fusion and discovered a way to prove nuclear physics incorrect.

Thus, I summarize ColdFusion mechanism again here, and would like to show nuclear physics researchers and Cold Fusion Researchers how to probe.

II. MECHANISM OF COLD FUSION

A. Deelctro Deep Orbit Theory

Electron deep orbits has been theoretically studied and proved by J Maly, J. Vávra, J.L. Paillet, A. Meulenberg, are in ref [2],[3],[4],[5],[6].

Maly and Vávra ELECTRON TRANSITIONS

TABLE I.A
Relativistic Schrödinger Levels for Hydrogen (Z = 1)*

	$E(N, Z)$	N	M	L	$E1S$	$E2S$
1s	-13.605826	1	0	0	-13.606597	-507 271.937500
2p	-3.501457	2	0	1	-3.401449	-13.605632 ^a
2s	-3.401457	2	1	0	-3.401570	-13.603699
3d	-1.511759	3	0	2	-1.511747	-3.401425 ^a
3p	-1.511759	3	1	1	-1.511755	-509 755.250000
3s	-1.511759	3	2	0	-1.511790	-3.401207
4f	-1.511764	4	0	3	-0.850357	-1.511744 ^a
4d	-0.850364	4	1	2	-0.850358	-13.605434 ^a
4p	-0.850364	4	2	1	-0.850361	-13.604666
4s	-0.850364	4	3	0	-0.850376	-1.511683
5g	-0.850364	5	0	4	-0.544228	-0.850356 ^a
5f	-0.544233	5	1	3	-0.544228	-3.401415 ^a
5d	-0.544233	5	2	2	-0.544229	-510 264.468750
5p	-0.544233	5	3	1	-0.544231	-3.401328
5s	-0.544233	5	4	0	-0.544238	-0.850331
6h	-0.544233	6	0	5	-0.377936	-0.544228 ^a
6g	-0.377940	6	1	4	-0.377936	-1.511743 ^a
6f	-0.377940	6	2	3	-0.377936	-13.605356 ^a
6d	-0.377940	6	3	2	-0.377937	-13.604863
6p	-0.377940	6	4	1	-0.377938	-1.511719
6s	-0.377940	6	5	0	-0.377942	-0.544215

*In electron volts.
^aNegative energy states, not observable.

Fig 1 Numerical Simulation in Ref [2] Electron Deep Orbit as is Shown in the Numbers Enclosed in a Square.

Ref [2]-[5] is important for nuclear physics researcher, thus you should read and understand the theory by yourself. I just show you the electron deep orbit is proved by the theoretical study. Electron deep orbit was accepted as a matter of course before the introduction of neutrons as a fundamental particle.

Beta decay of neutron is caused by the instability of orbiting electron in Deep Electron Orbit at the protrusion due to quarks show in in Fig.4(2), and beta-decay can be explained by the departure of electron from deep orbit due to its instability of electron in deep orbit at protrusion by quarks.

I do not think most researchers accept this but this used to be the standard theory before the introduction of neutron as is explained in introduction in ref [7]. Without understanding the correct nucleus model, study on nuclear physics and especially on the super-heavy element stagnate.

B. Expandable T Site

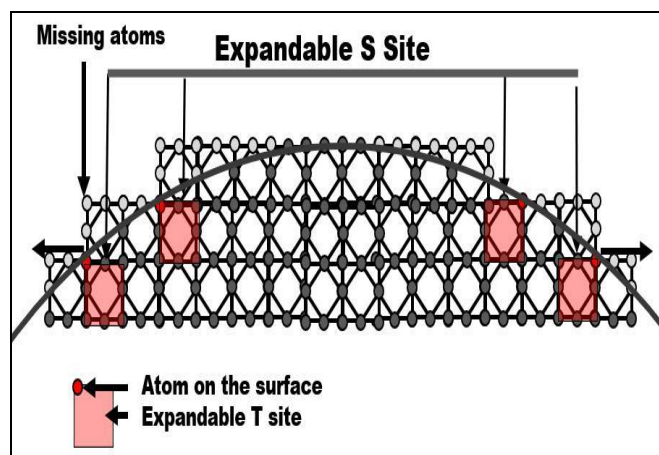


Fig 2 Expandable T Site on the Surface of Metal [1],[2]

Cold fusion occurs at the expandable T site of FCC metal [1]. Surface with nano-roughness has the movable metal atoms at T site with no bond to the atom in the adjacent T site, which I name “Expandable T site”. The metal atoms at expanded T site can compress covalent bond of D₂ molecules to transition to be femto-D₂ molecules as is shown in Fig.2.

C. Femto-D₂ and -H₂ generation at Expanded T Site

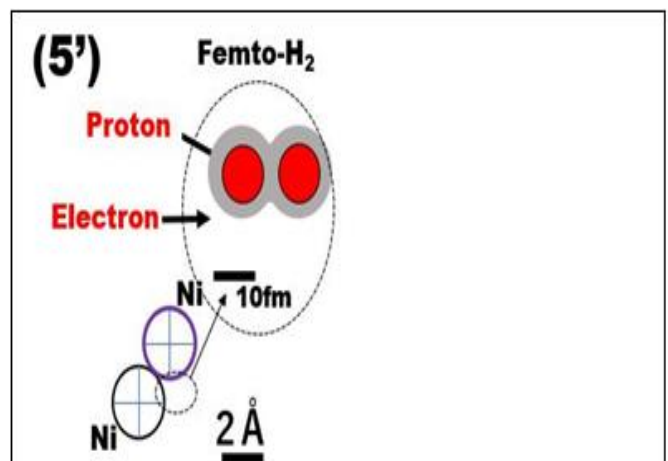
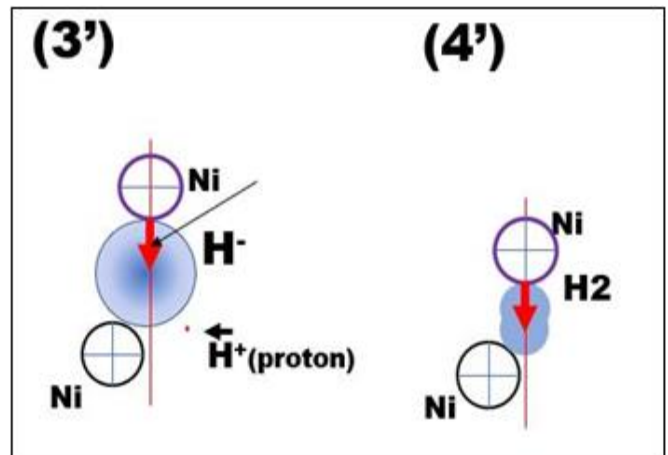
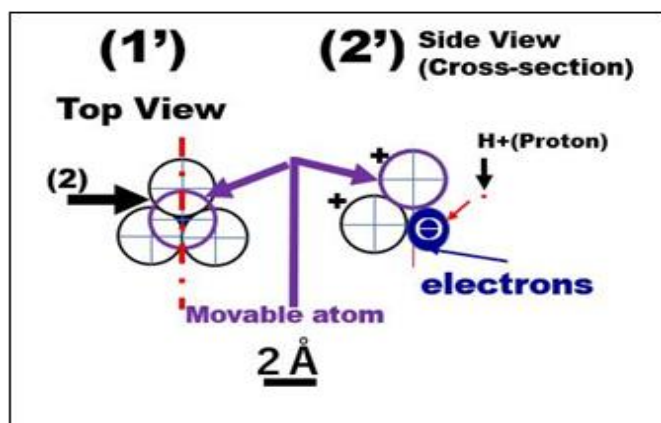
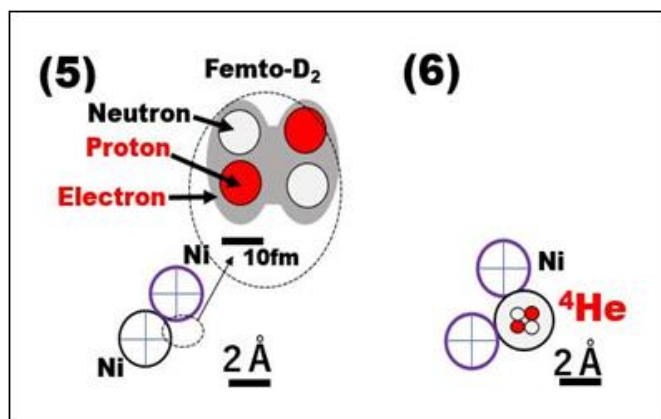
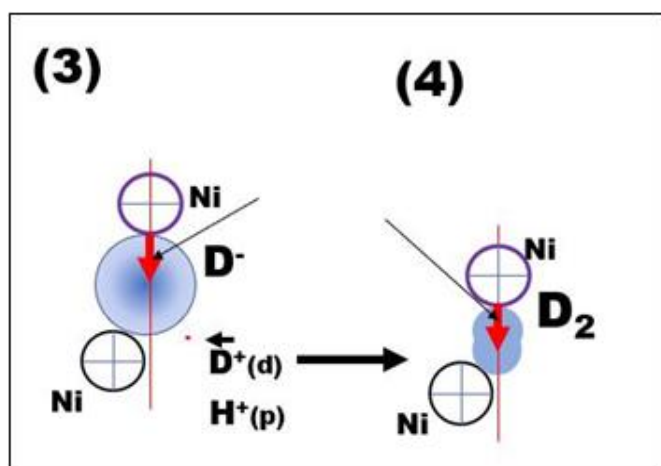
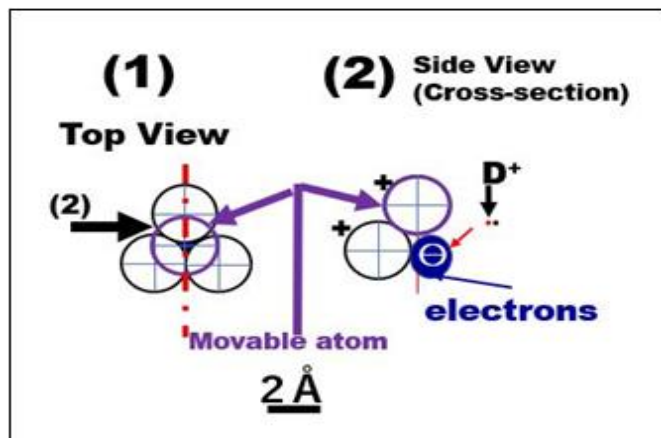


Fig 3 Femto-D₂ and Femto-H₂ Generation at the Expandable T Site on the Surface of Metal [1]

With D₂ gas, expandable T site attracts D⁺ to be D⁻ in Fig2(3), and D⁻ attracts D⁺ to join to be D₂ at the expanded T site in Fig.2(4). Cold Fusion occurs by the triggering with high temperature at ~700 degree C. As is shown in Fig2(5), electron between d-d is so dense that it can shield the coulomb Repulsive force to cause fusion. With H₂ gas, femto-H₂ is created at the expanded T site in Fig.2(5'). Because femto-D₂ and femto-H₂ is neutral, it can fuse to the target elements.

Because conventional femto-H₂ and femto-D₂ creation need the expandable T site on the metal surface with nano-roughness as is shown in Fig.1, it is very difficult to increase the number of expandable T site significantly. I thought that it is practical to consider other methods than that, and proposed helium-3 production with femto-H₂ in ref [1]. Mechanism of Cold Fusion is the compression of D-D covalent bond to transit electron to the deep orbit; thus, compression of nano-zeolite can transition of electron orbit from n=1 to deep orbit to create femto-D₂ and femto-H₂.

III. TRANSMUTATION BASED BY COLD FUSION

A. Transmutation Experiment by Femto-D₂

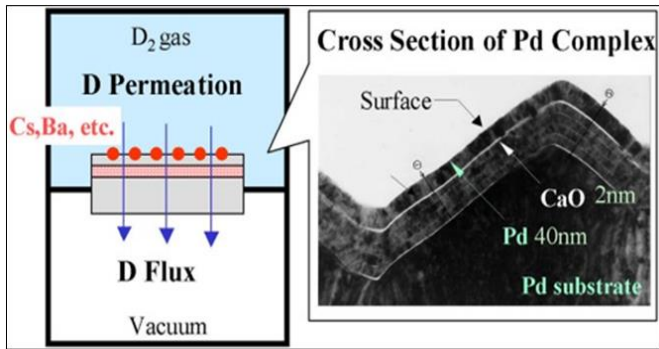


Fig 4 Transmutation Experiment by Iwamura [6]

Transmutation experiment of the stacked structure of target metal/Pd at 70degree to prevent cold fusion is reported in ref [6]. Cold Fusion is caused by the fusion of femto-D₂ to the target element. At lower temperature, femto-D₂ exists inside metal but because femto-D₂ is neutral and it descends by the gravity, therefore, femto-D₂ cannot reach the target element, placed on top and side. Target needs to be placed on the downside.

B. D is Constituted by Two Protons and One Internal Electron[7],[8]

The followings are the reaction mechanism of transmutation with femto-D₂ to the target metal in ref [7],[8].

- $^{88}_{38}\text{Sr} + 2d = ^{92}_{42}\text{Mo}$, (atomic number increase=4)
- $^{133}_{55}\text{Cs} + 2d = ^{137}_{99}\text{Pr}$, (atomic number increase =4)
- $^{182,183,184}_{74}\text{W} + 2d = ^{186,187,188}_{78}\text{Pt}$, (atomic number increase =4)
- $^{20}\text{Ca} + 2d = ^{22}\text{Ti}$, (atomic number increase =2)
- $(4-2) ^{20}\text{Ca} + 2d = ^{44}_{24}\text{Cr} \Rightarrow ^{44}_{23}\text{V} \Rightarrow ^{44}_{22}\text{Ti}$ (if d=2),
- (Under the assumption that atomic number increase =4)

Based on the results of transmutation experiment, all of the experiments show that d is constituted by two protons and one internal electron and that the current nucleus model and neutron model are incorrect [3].

IV. CORRECT NUCLEUS MODEL AND NEUTRON MODEL BASED ON TRANSMUTATION EXPERIMEN

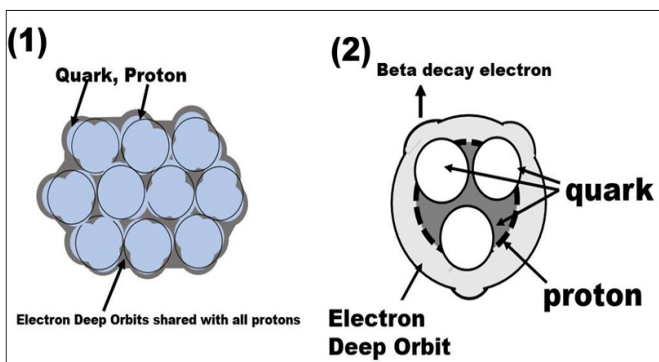


Fig 5 Correct nucleus model (1) and neutron model (2)

Correct model is reported in ref [7],[8]. The nucleus is constituted only by protons and internal electrons as is shown in Fig.4(1), and “neutron” is a pair of proton and electron in deep electron orbit as is shown in Fig.4(2). These were the standard theory most researchers accepted before the introduction of neutron as a fundamental particle, and historical background is in ref [4]. I would like to ask the nuclear physics researchers to study electron deep orbit and history of neutron introduction by yourself.

V. CORRECTION OF NUCLEAR FORCE

As is shown in Fig.4(1), no neutrons in the nucleus and electrons inside the nucleus. Therefore, current nuclear force can be incorrect. This is very important for nuclear physics and particle physics. Thus, researchers must understand the nature of electron deep orbit in ref [2],[3],[4],[5]. Note that electron in deep orbit is relativistic electron by solving relativistic Schroedinger equation and modified coulomb potential. Because coulomb potential with point charge has anomaly at r=0, they modified the coulomb potential that the nucleus has uniformly distributed positive charge inside.

Note that current result on the stability of nucleus need to be modified based on the correct nucleus model.

I presume that it is reasonable to think that the electrons in the nucleus bind the protons.

VI. PROOF THAT FEMTO-D₂ EXISTS

When femto-D₂ is used for transmutation experiment, since d is believed to be constituted by proton and neutron, it is not possible to determine whether the nuclear model or the Femto-D₂ model is incorrect. Therefore, I proposed to run transmutation experiment with femto-H₂, because H has only one proton.

A. Helium-3 in Plasma Fusion Reactor

As is reported in ref [9], plasma fusion reactor has helium-3.

- *Helium-3 is caused by the fusion of femto-H₂ to proton or deuteron, as follows.*
- $p + \text{femto-H}_2 = ^3_3\text{Li} = ^3_2\text{He}$ (electron capture)
- $d + \text{femto-H}_2 = ^4_3\text{Li} = ^3_2\text{He} + p$ (proton emission)

B. Brown-Gas, HHO Gas. OHMASA-Gas

Brown gas, HHO gas, OHMASA-gas are constituted by hydrogen, oxygen-16, oxygen-18, and helium-3 by the transmutation of H₂O, reported in ref [11],

- $^1_1\text{H} + \text{femto-H}_2 = ^3_3\text{L} = ^3_2\text{He}$ (electron capture)
- $^{16}_8\text{O} + \text{femto-H}_2 = ^{18}_{10}\text{Ne} = ^{18}_9\text{F} = ^{18}_8\text{O}$ (electron capture)

This mixed gas is called brown gas, and is now called HHO gas, OHMASA gas, which are commercially available in Japan [12], and is available in US [13]. Although the mechanism of brown gas has not been clear, many companies in Japan and in the US are selling it as brown gas, HHO gas,

and OHMASA-GAS. OHMASA-GAS has proven that 10kwh of electricity can generate 20kwh of electricity, in ref [11].

Because brown gases are commercially available in Japan and in the US, I would like to ask the Governments

researchers and companies selling brown gas to mass analyze brown gas with high resolution to separate helium-3, helium-4 and hydrogen to prove that brown gas is generated by the transmutation of H_2O with femto- H_2 , which will change the world academically and industrially.

VII. CONCEPTUALIZED FEMTO- H_2 GENERAR

A. Femto- H_2 Transmutation

Disadvantage of conventional transmutation based on Cold Fusion is the total amount of femto- H_2 can not be increased drastically because reaction site is on the surface with nano-roughness.

B. Structure of Nano-Zeolite to Filter H_2 Gas

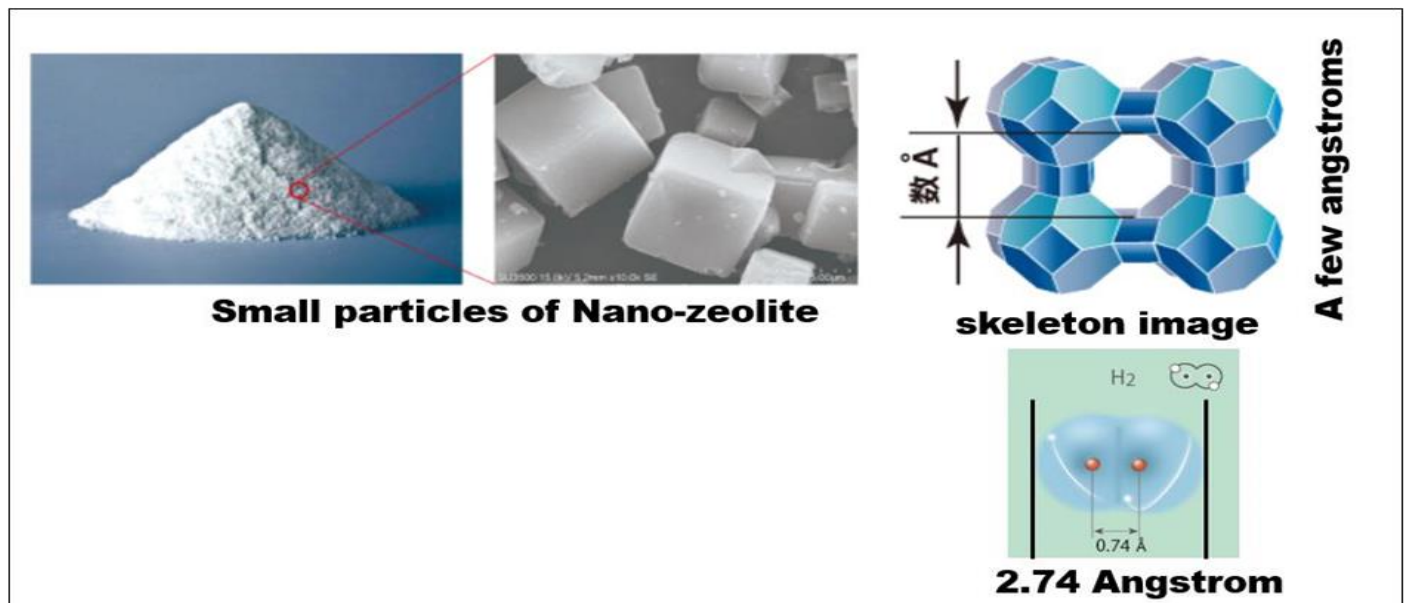


Fig 6 Nano Zeolite Structure [14]

- Thus, I proposed to use nano-zeolite in ref [9].

C. Compression of Covalent Bond of H_2 Confined at Nano-Pore of Nano-Zeolite to Produce Femto- H_2

Nano-zeolite for hydrogen filter has been developing lately for the hydrogen society, and are commercially available in ref [14].

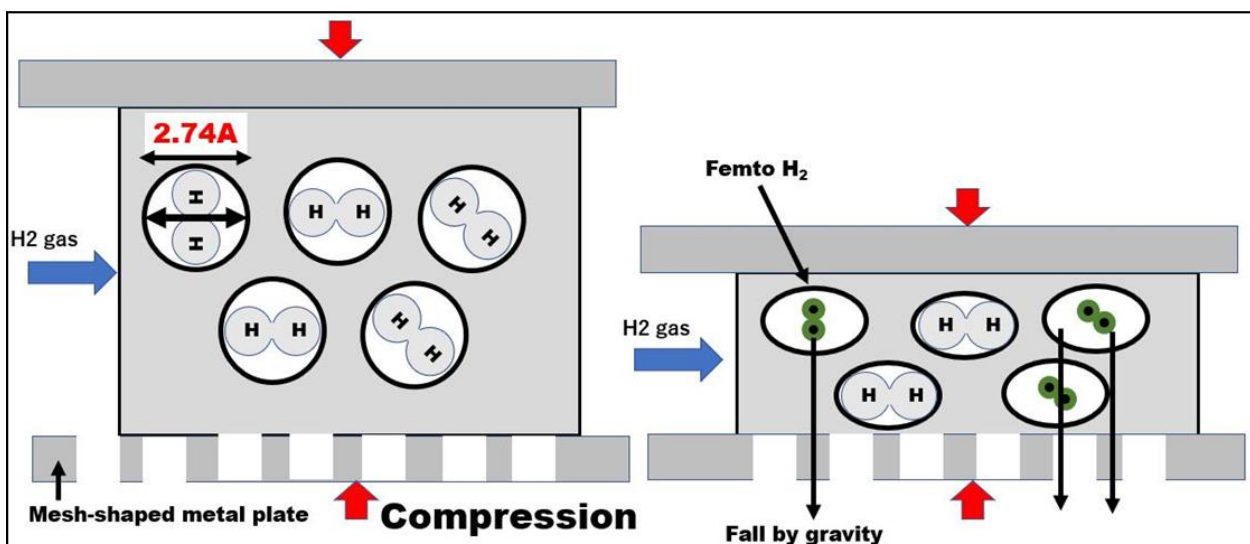


Fig 7 Femto- H_2 Generator by Compression of H_2 Molecules Confined at Nano-Pore of Nano-Zeolite

Currently, nano-zeolite is being developed as a hydrogen filter, and nano-pore size is targeting hydrogen molecules. Thus, femto-H₂ can be generated by compression of standard nano-zeolite to contain H₂ gas. By compression of covalent bond of H₂ molecule, H₂ transitions to femto-H₂ molecule. Femto-H₂ is for the mass production of helium-3 and for the production in D-3He plasma fusion reactor in ref [9]. Thus femto-H₂ generator is important for plasma fusion.

Because it has a possibility to mass-produce helium-3 with the proposed femto-H₂ generator in Fig.6 due to the larger amount of reaction site in nano-zeolite.

VIII. FEMTO-CL₂ FOR TRANSMUTATION

Based on transmutation experiment by Iwamura [6], the increase of atomic number with femto-D₂ is 4, therefore, Plutonium cannot be transmuted to a stable heavy metal due to the instability of heavy metal element around plutonium just adding 4 atomic number. Thus, plutonium must be transmuted by adding larger number of mass (larger number of protons). Therefore, I would like to propose the femto-gas molecule generator as the following way.

- Femto-N₂(¹⁴₇N=14proton), adding 2x14 protons.
- Femto-O₂(¹⁶₈O=16proton), adding 2x16 protons.
- Femto Cl₂(^{35,37}₁₇Cl=35,37proton), adding (2x35,37) protons.

IX. TRANSMUTATION OF U AND PU TO THE STABLE SUPER-HEAVY ELEMENT

A. Compression of Cl₂ can Generate Femto-Cl₂

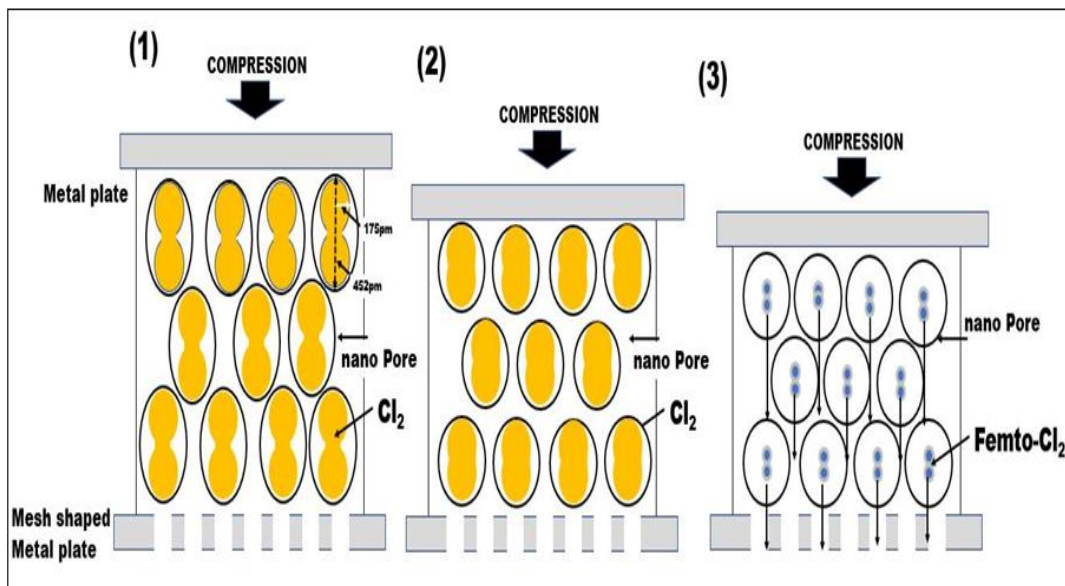


Fig 8 Femto-Cl₂ Generator

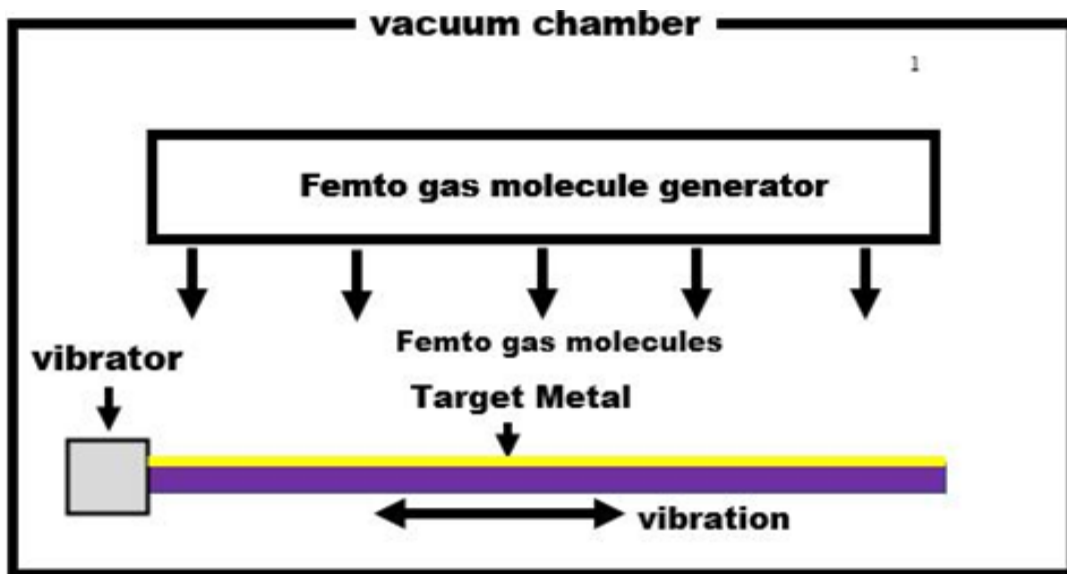


Fig 9 Conceptualized Transmutation Reactor

Femto-Cl₂ generator needs the development of nano-zeolite with nano-pore of the size of CL₂ molecules as is shown in Fig.9, and transmutation reactor is shown in Fig.10.

Note that femto-Cl₂ is neutral and it free-falls by the gravity. Estimation of energy per proton at 1m is 1.64E-26J, which is so low that negligible energy transfer from femto-Cl₂ to target element.

Because the size of nucleus is a few femtometer and the size of an atom is an angstrom, probability of a collision between a femto molecule and a nucleus is zero. Therefore, no fission occurs.

Collision probability between target nucleus and femto-Cl₂ need to be as high as possible to cause fusion. Thus, it is important to increase the possibility of collision between femto-Cl₂ and target nucleus. In order to increase the collision probability, vibration of target element need to be perpendicular(lateral) to the trajectory(vertical) of femto-Cl₂, thus lateral vibration of target element needs to be very high.

B. The Transmutation Mechanism with Femto-Cl₂ into the Island of Stability

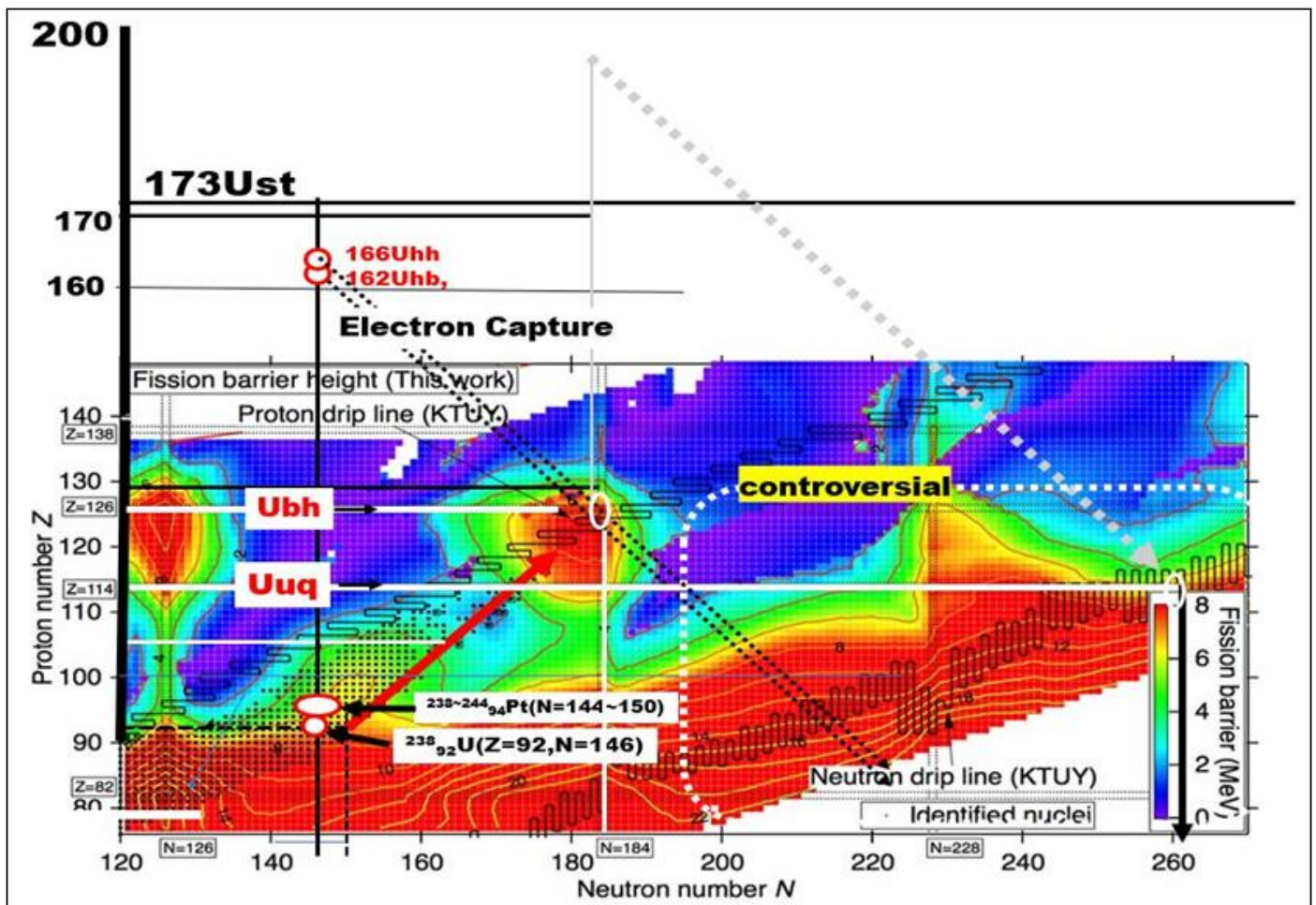


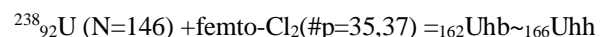
Fig 10 Island of Stability and the Path to Stable Super-Heavy Element by Transmutation with Femto-Cl₂

Recent theoretical study on the island of stability [15] is shown in Fig.11. However, this study is based on the incorrect nucleus model and neutron model, this study needs to be corrected based on the correct nucleus model.

However, I will use this chart in order to show the possibility to access the super-heavy element in the island of stability.

Because of the wide ocean in front of the island of stability, U and Pu cannot reach the island of stability by adding few protons. Thus, I would like to propose the femto-Cl₂ to transmute from U and Pt to the stable super-heavy element in the island of the stability.

By adding Cl₂ to U, transmuted element is as follows.



Note that ¹⁷³Ust is said to be the last element that could theoretically exist. Thus ¹⁶²Uhb, ¹⁶⁶Uhh exists.

Because femto-Cl₂ fusion is so soft that less excess energy is added to the target nucleus, it does not excite transmuted nucleus and it does not fission and they decay to the stable heavy element of Z=126 in the island of stability by electron capture.

Thus, I propose to develop femto-Cl₂ generator with nano-zeolite.

C. Multiple transmutation with femto-Cl₂
2nd transmutation is as follows,

- $^{126}\text{Ubh} + \text{protons} (\#70, \#74)$
- $\Rightarrow \text{Element of } Z=196, 200.$
- $\Rightarrow \text{decay to Element of } Z=114, N\sim 261$

For the case of U+femto-Cl₂, transmuted element is ^{126}Ubh , and adding femto-Cl₂ to ^{126}Ubh is element of $Z=196, 200$, which exceeds ^{173}Ust . I am not sure that this could occur. However, under the assumption that there is a possibility that the element exists momentarily, the element will decay by the electron capture to ^{114}Uuq , which is in the controversial region of stable super heavy element could exist or not.

X. PROPOSITIONS TO GOVERNMENTS AND RESEARCH INSTITUTIONS

Because the impact to define Cold Fusion mechanism based on femto-D₂ is so enormous, it is necessary for governments to lead the discussion.

A. Experiment to Prove the Existence of Femto-H₂ by Brown Gas

If we can prove that femto-H₂ exists, we can also prove that femto-D₂ exists. We have plenty of circumstantial evidence that femto-H₂ exists, and we have already used these tools, HHO gas, or OHMASA gas in Japan and probably in the US.

Thus, I would like to request governments and researchers and companies delivering Brown gas to mass analyze the gas with mass-resolution that can separate hydrogen, helium-3, and helium-4 to probe that brown gas has helium-3.

Plasma-fusion reactor has the reactor inner wall has the hydrogen embrittlement which produce femto-H₂[1]. This need to be checked by Helion energy and I would like to ask them to study and published the results to the plasma fusion society.

B. Discussion on Cold Fusion Mechanism on Femto-D₂ Fusion

Discussion should take place within the Nuclear Physics Society because it affects nucleus model and neutron model.

C. Theoretical Study on Super Heavy Element based on the Correct Nucleus Model.

D. Feasibility Study of Femto-H₂ Generator with Nano-Zeolite

This generator has the possibility to mass produce helium-3 on earth.

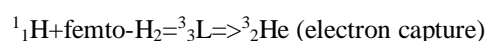
E. Feasibility Study of Femto-Cl₂ Generator with Nano-Zeolite

This generator opens to way to stable super heavy element.

XI. SUMMARY

Transmutation experiment with femto-D₂ based on Cold Fusion mechanism show that d is constituted by two proton and one internal electron, which is contradictory to the current nucleus model and neutron model. Thus, I proposed to use transmutation with femto-H₂ so that experiment has no doubt. And I discovered phenomena that seem to be related to transmutation with femto-H₂. One is existence of helium-3 in plasma fusion chamber, and another is brown gas.

➤ *Transmutation Reaction is as follows.*



Thus, it is straightforward to probe that femto-H₂ exist by mass analysis of brown gas which is commercially available.

And I propose to start the discussion by nuclear physics society to defines the standard theory for cold fusion and correct nucleus model and neutron model.

And nuclear physics society start the discussion on nuclear force to be corrected based on correct nucleus model.

I also proposed the development of femto-H₂ with nano-zeolite to mass-produce helium-3 for plasma fusion project and feasibility study on femto-Cl₂ after the study on new theory of super-heavy element.

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